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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/795,769	03/08/2004	Michael Lee Rudolph	IM1319USNA	4094

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EXAMINER	
WALKE, AMANDA C	
ART UNIT	**PAPER NUMBER**
1752	

DATE MAILED: 09/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/795,769	RUDOLPH ET AL.	
	Examiner	Art Unit	
	Amanda C. Walke	1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-74* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-74* is/are rejected..

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 3/8/2004 has been considered by the examiner.

Drawings

2. The drawings were received on 3/8/2004. These drawings are accepted by the examiner.

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-74 are rejected under 35 U.S.C. 102(e) as being anticipated by Fan et al (6,773,859)

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the

inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Fan et al disclose a process for preparing a flexographic printing plate from a photosensitive element having a photopolymerizable layer and a thermally removable layer on the photopolymerizable layer. The process includes imagewise exposing the photosensitive element and thermally treating the exposed element to form a relief suitable for use in flexographic printing. The thermally removable layer can be transparent or opaque to actinic radiation. The invention also relates to a photosensitive element for use in this process. The photosensitive element includes a photopolymerizable layer and at least one thermally removable layer having a filler and a binder, wherein the binder is less than 49% by weight, based on the total weight of the binder and filler. The process of the present invention prepares a flexographic printing plate from a photosensitive element comprising a photopolymerizable layer and at least one thermally removable layer thereon and includes the steps of imagewise exposing, and thermally treating to form a relief surface. The photosensitive element is able to withstand the conditions associated with thermal processing. Uncured portions of the photopolymerizable layer as well as the thermally removable layer/s thereon can be effectively removed to provide a relief plate suitable for high quality flexographic printing. In addition, the photosensitive element used in the present process is able to reproduce the fine picture elements from the desired image without distortion. Such a photosensitive element will allow one to use processing conditions that will not be detrimental to the fine features of the plate and/or a support for the element. Additionally, the photopolymerizable elastomeric layer of the photosensitive elements useful in this invention can be effectively processed in less number of cycles of heating and contacting

and/or at lower temperatures. Also, the photosensitive element provides wide exposure and processing latititude. The thermoplastic binder can be a single polymer or mixture of polymers. Binders include natural or synthetic polymers of conjugated diolefin hydrocarbons, including polyisoprene, 1,2-polybutadiene, 1,4-polybutadiene, and butadiene/acrylonitrile. Preferably, the thermoplastic binder is an elastomeric block copolymer of an A-B-A type block copolymer, where A represents a non-elastomeric block, preferably a vinyl polymer and most preferably polystyrene, and B represents an elastomeric block, preferably polybutadiene or polyisoprene. Suitable thermoplastice elastomeric binders of this type include poly(styrene/isoprene/styrene) block copolymers and poly(styrene/butadiene/styrene) block copolymers which are preferred. The non-elastomer to elastomer ratio is preferably in the range of from 10:90 to 35:65. Most preferably the thermoplastic elastomeric binder is a mixture of at least two poly(styrene/isoprene/styrene) block copolymers as described by Dudek et al. in U.S. Pat. No. 5,972,565. It is preferred that the binder be present in an amount of at least 60% by weight of the photosensitive layer. The photosensitive element includes at least one photopolymerizable layer that can be of a bi- or multi-layer construction. Further, the photosensitive element may include an elastomeric capping layer on the at least one photopolymerizable layer. The elastomeric capping layer should have an elastic modulus in the polymerized state not substantially less than the elastic modulus of the photopolymerizable layer in the exposed state. The composition of the elastomeric layer comprises an elastomeric polymeric binder, an optional second polymeric binder and optionally a nonmigratory dye or pigment. The elastomeric composition can also contain a monomer or monomers and a photoinitiating system. The elastomeric polymeric binder in the elastomeric composition is generally the same as or similar to the elastomeric binder

present in the photopolymerizable layer. Materials suitable for use as the radiation opaque material and the infrared absorbing material include, but is not limited to, metals, metal alloys, pigments, carbon black, graphite and combinations thereof. Mixtures of pigments in which each pigment functions as the infrared absorbing material, or the radiation opaque material (or both) can be used with the binder. Dyes are also suitable as infrared absorbing agents. Examples of suitable dyes include poly(substituted)phthalocyanine compounds; cyanine dyes; squarylium dyes; chalcogenopyrloarylidene dyes; bis(chalcogenopyrylo)-polymethine dyes; oxyindolizine dyes; bis(aminoaryl)-polymethine dyes; merocyanine dyes; croconium dyes; metal thiolate dyes; and quinoid dyes. Preferred is carbon black, graphite, metal, and metal alloys that functions as both the infrared absorbing material and the radiation opaque material. The radiation opaque material and the infrared absorbing material may be in dispersion as described below to facilitate handling and uniform distribution of the material. Typically, the radiation opaque material and the infrared absorbing materials have melting temperatures above the treating temperature. The thermally removable layer of the group (b) is a layer of a composition comprising at least one binder and filler, wherein the binder is less than 49% by weight based on the total weight of the binder and filler. The binder for the thermally removable layer can be from 1 to 49% by weight, based on the total weight. Since the amount of binder in the thermally removable layer (b) is less than 49% by weight, the filler is present at least 51% by weight based on the total amount of binder and filler in the layer (b). The filler in the thermally removable layer (b) of at least 51% by weight forms a discontinuous layer with the binder. The thermally removable layer (b) being a discontinous layer is particularly useful when the binder for layer (b) has a melting point or softening point above 190.degree. C. During thermal treatment, the application of heat and

contacting with the absorbent material, preferably with added pressure, aids in the formation of microcracks in the discontinuous layer so that the thermally removable layer and the underlying unpolymerized portions of the photopolymerizable layer can be thoroughly removed during treatment. Microcracks are breaks, fractures, or cracks which are small, that is, on the order of microns or significantly less in size. The filler, or an inorganic dispersion of the filler, will not form a film by itself. Generally, a binder alone is capable of forming a film. But when the binder has a melting or softening temperature above the treating temperature (i.e., greater than 200.degree. C.) and forms a continuous layer with a filler (that is, the binder is in a greater porportion to the filler) on the photopolymerizable layer, the layer does not melt, soften, or flow during thermal treating and results in incomplete removal of the resulting layer and/or the unpolymerized portions. Binders having a melting point or softening point below 190.degree. C. are also suitable for use in the thermally removable layer (b). Thus, the melting point or softening point of a material or materials in a layer disposed above the photopolymerizable layer is not longer a limitation of a photosensitive element for use in a thermal development process. (See Examples 7 and 8.) It is also possible to include one or more additional binders with the binder of thermally removable layer (b). The coating thickness of the thermally removable layer (b) should be less than 50 micrometers, preferably less than 25 micrometers.

Given the teachings of the reference, the instant claims are anticipated by the reference.

6. Claims 1-74 are rejected under 35 U.S.C. 102(e) as being anticipated by Fujimoto et al (6,897,006).

Fujimoto et al disclose a multilayered photosensitive material for processing into a flexographic printing plate by direct patterning with an infrared laser beam. The multilayered

material comprises: (A) a substrate; (B) a photosensitive resinous layer having sensitivity to light excepting infrared light and comprising (b1) an elastomeric binder resin, (b2) a polymerizable monomeric compound and (b3) a polymerization initiator formed on the substrate (A); (C) a barrier layer of a composition comprising a resin such as a polyvinyl pyrrolidone and alkali-soluble cellulose compounds, which transmits light other than infrared light and is removable in the development treatment, formed on the photosensitive resinous layer (B); and (D) a masking layer of a composition comprising (d1) a film-forming binder resin, (d2) an infrared absorbing compound and (d3) a compound having no transmissivity to lights other than infrared light and removable by irradiation with an infrared laser beam, formed on the barrier layer (C). The barrier layer (C) formed on the above-described photosensitive resinous layer (B) has a low permeability to oxygen and protects the photosensitive resinous layer (B) against the influence of the atmospheric oxygen. The barrier layer (C) is required to have good transmissivity to non-infrared light for patterning exposure of the photosensitive layer and to be capable of being removed by dissolving, swelling, dispersing or lifting in the developer solvent or solution used for the development treatment of the photosensitive resinous layer after patternwise exposure to light. The barrier layer (C) also serves to protect the photosensitive resinous layer (B) in the process of removing the masking layer (D) by irradiation with infrared laser beams and to inhibit migration of the component ingredients between the photosensitive resinous layer (B) and the masking layer (D). It is essential that the barrier layer (C) contains a resinous compound selected from polyvinyl pyrrolidones and alkali-soluble cellulose derivatives in order to be able to control permeation of atmospheric oxygen. The barrier layer (C) should have a sufficiently large thickness in order to effectively control permeation of the atmospheric oxygen while the

thickness of the layer (C) should be sufficiently small in order to minimize the shielding effect against the exposure light for the patterning exposure of the photosensitive resinous layer (B). In consideration of the balance between these contradictory requirements and assuming that the material of the barrier layer has an oxygen permeability coefficient in the above specified range, the barrier layer (C) has a thickness in the range from 0.05 to 20 microns or, preferably, from 0.1 to 10 microns. Among the above named infrared absorbing agents, carbon black is particularly preferable in respects of high efficiency of energy conversion from light to heat, economical advantages and easiness of handling. While carbon blacks can be used irrespective of the particle diameter in the range from 10 to 100 nm, the particle diameter should desirably be as small as possible since carbon black particles having a smaller particle diameter have higher sensitivity to infrared light.

Given the teachings of the Fujimoto et al reference for the layers, particles and sizes of those particles, the instant claims are anticipated by the reference.

7. Claims 1-74 are rejected under 35 U.S.C. 102(e) as being anticipated by Leenders et al (6,358,668).

Leenders et al disclose a flexographic printing plate and comprises in the order given a base, a photopolymer layer, a barrier layer wherein the main component is a polymer different from gelatin, and an ink receiving layer wherein the main component is gelatin. An image having a high optical density can be printed on the ink receiving layer by image-wise jetting a water-based ink because the gelatin in the ink receiving layer has excellent ink receptivity and because the barrier layer reduces diffusion of monomers from the photopolymer layer to the ink receiving

layer. The image present in or on the ink receiving layer can then be used as a photomask for the subsequent flood exposure of the photopolymer layer. After processing, a flexographic printing plate is obtained. The receiving layer can further contain organic or inorganic fillers and porous particulate material. Inorganic materials include e.g. synthetic silica, talc, clay, koalin, diatomaceous earth, calcium carbonate, magnesium carbonate, aluminum hydroxide, aluminum oxide, boehmite and pseudo-boehmite, titanium oxide, zinc oxide, barium sulfate, calcium sulfate, zinc sulfide, satin white, aluminum silicate, calcium silicate, lithopone, etc. Organic materials include e.g. polystyrene, polymethacrylate, polymethylmethacrylate, elastomers, ethylene-vinylacetate copolymers, polyesters, polyester-copolymers, polyacrylates polyvinylethers, polyamides, polyolefines, polysilicones, guanamine resins, polytetrafluoroethylenes, elastomeric styrene-butadiene rubber (SBR), elastomeric butadiene-acrylonitrile rubber, urea resins or urea-formalin resins. The receiving layer can further contain a so-called "spacing agent" which is used here as equivalent to "matting agent" or "roughening agent". Said spacing agent is preferably hydrophilic. Useful examples are the different types of silica such as disclosed e.g. in U.S. Pat. No. 3,084,131, U.S. Pat. No. 4,892,591, U.S. Pat. No. 4,902,568, EP 379964, EP 423829, U.S. Pat. No. 5,165,973, EP 739747, EP 781666, EP 803374, EP 862510, Wo 97/20691; starch or modified starch particles such as disclosed in EP 445327, EP 480362, EP 524635; and the alkali-soluble beads of U.S. Pat. No. 4,906,560 and EP 0 584 407. The material of the present invention also comprises a transparent barrier layer between the photopolymer layer and the ink receiving layer. This barrier layer reduces diffusion of monomers from the photopolymer layer to the ink receiving layer, so that the hydrophilic character of said ink receiving layer remains intact during storage. Preferred polymers for use as a barrier are

polyamides or copolyamides, e.g. those obtained from bifunctional carbonic acids such as adipinic acid and diamines or .omega.-amino acids, lactams or derivates thereof, e.g. nylon 3, 4, 5, 6, 8, 11, 12, 13, 6.6, 6.10 or 6.13; metaxylene diamine; trimethyl-hexamethylene diamine;isophoron diamine; 4,4-diamine-dicylcohexylmethane; or the N-methylol or N-alkoxymethyl derivatives of these homo- and copolyamides. Highly preferred barrier polymers are hydroxyalkylcellulose (alkyl being preferably ethyl or propyl) and fully or partially hydrolysed polyvinyl alcohol) alkanecarboxylate esters such as poly(vinyl acetate) or poly(vinyl propionate) having an hydrolysis grade of 88 to 98%. Such hydrophilic barrier layers can be removed with water simultaneously while washing away the ink receiving layer. An example of another highly preferred barrier polymer, which dissolves very well in a typical processing liquid used for processing the photopolymer layer such as Nylosolv II (available from BASF), is poly(vinyl butyraldehyde). The photopolymer layer of the material of the present invention comprises the compositions known in the art of flexographic printing. Typical compositions are photosensitive to UV light having a wavelength in the range from 300 to 420 nm. In addition to the positive-working systems such as those based on o-quinonediazide, the negative-working photopolymerisable and/or photocrosslinkable systems are preferred. Such systems typically comprise a monomer compound having at least one reactive vinyl group in its molecule. The reactive vinyl group in these compounds includes substituted or unsubstituted vinyl groups having polymerization reactivity, as exemplified by styrene type vinyl groups, acrylic acid type vinyl groups, methacrylic acid type vinyl groups, allyl type vinyl groups, and vinyl ether type vinyl groups, as well as ester vinyl groups as in vinyl acetate. The reference teaches that preferred silica particles are those taught by Morohoshi (4,902,568). The particles of this

reference are taught to be silica. As the particle diameter is smaller, the number of the particles of spherical silica being present in the surface and in the inside of the recording paper is increased, whereby probability of ink droplets being in contact with and being absorbed by spherical silica particles becomes greater. Accordingly, with respect to the dot shape, the particle diameter should be preferably as small as possible, but in the case of a particle diameter smaller than 0.5 microns, above all when it is 0.2 to 0.4 microns, the scattering coefficient becomes greater to bring about an undesirably lowering in optical density.

Given these teachings, the instant claims are anticipated by the reference.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kwan et al (6,478,861), Robinson et al (5,988,066), Knoll et al (6,673,857), Mahmud et al (6,323,273), Ellis (5,906,909), Teng (6,245,486), Wang et al (6,017,980), Cushner et al (5,804,353), and Kannurpatti et al (2002/0123003) are cited for their teachings of similar materials.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amanda C. Walke whose telephone number is 571-272-1337. The examiner can normally be reached on M-R 5:30-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Amanda C. Walke
Amanda C Walke
Examiner
Art Unit 1752

ACW
September 6, 2005